

Patent claims

1. The use of a transdermally administrable active compound having a low skin penetration rate for the 5 production of a medicament for use in transdermal therapy, which comprises

- a) an initial phase in which, as a consequence of ultrasonic treatment, the transdermally administrable active compound has an increased 10 skin penetration rate, and
- b) a subsequent long-term phase, in which the transdermally administrable active compound is delivered onto and through the skin without additional ultrasonic treatment.

15 2. The use as claimed in claim 1, where the medicament is a transdermal therapeutic system (TTS).

3. The use as claimed in claim 2, where the TTS is a pressure-sensitive contact adhesive layer.

4. The use as claimed in claim 2, where the TTS 20 has a porous layer.

5. The use as claimed in claim 2, where the TTS has a hydrogel layer.

6. The use as claimed in claim 1, where the initial phase extends over a period of 1 to 25 approximately 180 minutes.

7. The use as claimed in claim 1, where the initial phase preferably extends over a period of 1 to approximately 60 minutes.

8. The use as claimed in claim 1, where the 30 initial phase particularly preferably extends over a period of 1 to approximately 30 minutes.

9. The use as claimed in claim 1, where the initial phase very particularly preferably extends over a period of 1 to approximately 10 minutes.

35 10. The use as claimed in claim 1, where the ultrasonic treatment is carried out using a frequency from the range between 20 kHz and 10 MHz.

11. The use as claimed in claim 1, where the ultrasonic treatment is preferably carried out using a frequency from the range between 40 kHz and 1 MHz.

5 12. The use as claimed in claim 1, where the ultrasonic treatment is particularly preferably carried out using a frequency from the range between 800 kHz and 1 MHz.

10 13. The use as claimed in claim 1, where the ultrasonic treatment is carried out using an intensity of between 0.01 and 3.0 W/cm².

14. The use as claimed in claim 1, where the transdermal therapy is used for the treatment of pain.

15. The use as claimed in claim 1, where the transdermally administrable active compound having a 15 low skin penetration rate is an analgesic.

16. The use as claimed in claim 1, where the active compound is selected from the group consisting of morphine, heroin, the derivatives of morphine, the dihydromorphine derivatives, hydromorphone, oxycodone, 20 the morphinan derivatives, levorphanol, buprenorphine, the pethidine group, pethidine, ketobemidone, methadone, levomethadone, dextromoramide, fentanyl and its derivatives, the benzomorphan derivatives, pentazocine, the phenylaminocyclohexenyl derivatives 25 and tilidine.

17. The use as claimed in claim 1, where an agent improving the transmission of ultrasound is additionally employed.

18. The use as claimed in claim 17, where the agent 30 improving the transmission of ultrasound is an aqueous contact gel.

19. A process for the administration of a transdermally administrable active compound having a low skin penetration rate, comprising the steps:

35 a) sticking of a patch containing the transdermally administrable active compound onto the skin,
b) treatment of the skin-adherent patch with ultrasound during an initial phase, and

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- c) wearing of the patch during a subsequent long-term phase without additional ultrasonic treatment.

20. The process as claimed in claim 19, where the
5 patch is a transdermal therapeutic system.

21. The process as claimed in claim 19, where the patch contains a layer with a pressure-sensitive contact adhesive.

22. The process as claimed in claim 19, where the
10 patch contains a porous layer.

23. The process as claimed in claim 19, where the patch contains a layer containing a hydrogel.

24. The process as claimed in claim 19, where the initial phase extends over a period of 1 to
15 approximately 180 minutes.

25. The process as claimed in claim 19, where the initial phase preferably extends over a period of 1 to approximately 60 minutes.

26. The process as claimed in claim 19, where the
20 initial phase particularly preferably extends over a
period of 1 to approximately 30 minutes.

27. The process as claimed in claim 19, where the initial phase very particularly preferably extends over a period of 1 to approximately 10 minutes.

25 28. The process as claimed in claim 19, where the ultrasonic treatment is carried out using a frequency from the range between 20 kHz and 10 MHz.

29. The process as claimed in claim 19, where the ultrasonic treatment is preferably carried out using a
30 frequency from the range between 40 kHz and 1 MHz.

30. The process as claimed in claim 19, where the ultrasonic treatment is particularly preferably carried out using a frequency from the range between 800 kHz and 1 MHz.

35 31. The process as claimed in claim 19, where the ultrasonic treatment is carried out using an intensity of between 0.01 and 3 W/cm².

32. The process as claimed in claim 19, where an agent improving the transmission of ultrasonic waves is additionally applied to the patch adhering to the skin.

5 33. The process as claimed in claim 32, where the agent improving the transmission of ultrasound is an aqueous contact gel.

34. The process as claimed in claim 19 for the treatment of pain.

10 35. The process as claimed in claim 34, where the pains are chronic and/or acute states of pain.

36. The process as claimed in claim 19, where the transdermally administrable active compound having a low skin penetration rate is an analgesic.

15 37. The process as claimed in claim 19, where the active compound is selected from the group consisting of morphine, heroin, the derivatives of morphine, the dihydromorphine derivatives, hydromorphone, oxycodone, the morphinan derivatives, levorphanol, buprenorphine, the pethidine group, pethidine, ketobemidone, 20 methadone, levomethadone, dextromoramide, fentanyl and its derivatives, the benzomorphan derivatives, pentazocine, the phenylaminocyclohexenyl derivatives and tilidine.

25 38. A device for transdermal therapy, comprising
a) a transdermal therapeutic system (TTS)
containing an active compound having a
low skin penetration rate and
b) a sound source for ultrasound.

30 39. The device according to claim 38, furthermore containing an agent for improving the transmission of ultrasound.

40. The device as claimed in claim 39, where the agent improving the transmission of ultrasound is an aqueous contact gel.

35 41. The device as claimed in claim 38, where the TTS contains a layer of a pressure-sensitive contact adhesive.

42. The device as claimed in claim 38, where the TTS contains a porous layer.

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43. The device as claimed in claim 38, where the TTS contains a layer of a hydrogel.

44. The device as claimed in claim 38, where the active compound having a low skin penetration rate is
5 an analgesic.

45. The device as claimed in claim 38, where the active compound is selected from the group consisting of morphine, heroin, the derivatives of morphine, the dihydromorphine derivatives, hydromorphone, oxycodone,
10 the morphinan derivatives, levorphanol, buprenorphine, the pethidine group, pethidine, ketobemidone, methadone, levomethadone, dextromoramide, fentanyl and its derivatives, the benzomorphan derivatives, pentazocine, the phenylaminocyclohexenyl derivatives
15 and tilidine.

46. The device as claimed in claim 38, where ultrasound is generated in a frequency range from 20 kHz to 10 MHz.

47. The device as claimed in claim 38, where
20 ultrasound is preferably generated in a frequency range from 40 kHz to 1 MHz.

48. The device as claimed in claim 38, where ultrasound is particularly preferably generated in a frequency range from 800 kHz to 1 MHz.

25 49. The device as claimed in claim 38, where ultrasound is generated with an intensity of 0.1 to 3 W/cm².

50. The use of ultrasound for increasing the skin penetration rate of a transdermally administrable
30 active compound in a process for transdermal therapy, wherein

- a) in an initial phase ultrasound acts on the active compound situated in contact with the skin, and
- 35 b) in a subsequent long-term phase the ultrasonic treatment of the active compound is discontinued.